

Work Order ID 82831

\*82831\*

Page 1

April-10-12 2:16:50 PM

Item ID: D204-635-041

Accept

\*N900040100\*

Setup Start \*NS1\*

Revision ID:

Item Name: Replacement Skidtube

Stop \*NS2\*

Start Date: 10/04/2012 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 24/04/2012 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

Approvals: Process Plan: MLJ

Date: 12/04/10 Tooling:

Date:

Run Start \*NR1\*

QC:

Date: SPC (Y/N):

Date:

Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run/Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D2590-041	(DEO)REV.E								

SCRAP

100

\*100\*

DC

Document Control

Memo

0.00

Photocopy:bluefile &type labels per PPP D204-635-041  
CHG 005

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

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Item ID: D204-635-041

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**\*N900040100\***

Setup Start **\*NS1\***

Revision ID:

Item Name: Replacement Skidtube

Stop **\*NS2\***

Start Date: 10/04/2012 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 24/04/2012 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
110		0.00							
<b>*110*</b>									
Skidtubes	<b>Memo</b>	0.00							
Skidtubes	1- Inspect mat'l D2500-1-190 for damage								
	2-Cut D2500-1-190 per Dwg D2590 .Deburr ends								
	3-Drill pilot holes using drill jig DT 8149 & DT8711-1&-2 and open to finish size as per dwg								
	4-Deburr holes as per QSI002 section 4.2.3 and blow out all chips from inside of tube								
	5-Acid etch and Alodine tube per QSI 005 4.1								
	6-Bond web in place per QSI 015. Allow 12 Hrs. cure time before cutting								
	Pick:								
	Qty Part Number Description Batch								
	A/R Sikaflex-291								
	Sikaflex expire date: 13/03/19								
	Start Time: 0h30								
	Fin Time: _____								

1 SAD 12.07-26

W/O: 82831		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D204-635-041 PAR #: \_\_\_\_\_ Fault Category: SKD Tube NCR: Yes No DQA: Aut Date: 12/08/13  
 Resolution: \_\_\_\_\_ Disposition: Scrap QA: N/C Closed: 150 Date: 12/08/14

NCR: 1280.69		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
12/7/13	110	* Fuel band is 1.6" short <del>1.08</del> on length & 0.5" short on height. Cause: Saw setup resulted in wrong cut height.	<u>W</u> <u>12/8/13</u>	Based on eng layout, deduction is very noticeable. Tube should be scraped <u>CP 12/7/13</u>	<u>SAD</u> <u>12-08-02</u>	<u>12-8-2</u>	<u>W</u> <u>12/8/02</u>	<u>DAS</u> <u>16</u> <u>8-13</u> <u>12/8/02</u>

NOTE: Date &amp; initial all entries

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Item ID: D204-635-041

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**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Replacement Skidtube

Start Date: 10/04/2012 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 24/04/2012 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:


Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120		0.00							
<b>*120*</b>									
CNC Bend 1	Memo	0.00							
CNC Delta 100 Bender	Bend as per program D2590.C on CNC Bender								
130		0.00							
<b>*130*</b>									
Skidtubes	Memo	0.00							
Skidtubes	1-Cut tubes as per Dwg. D2590 .								
	2-Deburr ends after cutting.								
140	QC6- Inspect dimensions to drawing	0.00							
<b>*140*</b>									
QC	Memo	0.00							
Quality Control									

 12-7-27

PTO →

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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## Quality Control

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Start Date: 10/04/2012 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 24/04/2012 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start **\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop **\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

170

QC6- Inspect dimensions to drawing

0.00

**\*170\***

QC

Memo

0.00

Quality Control

175

Pressure Wash per QSI005 4.3

0.00

**\*175\***

HandFinish

Memo

0.00

Hand Finishing

Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.

180

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00

**\*180\***

Powdercoat

Memo

0.00

Powder Coating

START TIME:

OVEN TEMPERATURE:

FINISH TIME:

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Setup Start

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Revision ID:

Item Name: Replacement Skidtube

Stop

**\*NS2\***

Start Date: 10/04/2012 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 24/04/2012 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals:

Process Plan: \_\_\_\_\_

Date: \_\_\_\_\_

Tooling: \_\_\_\_\_

Date: \_\_\_\_\_

Run Start

**\*NR1\***

QC: \_\_\_\_\_

Date: \_\_\_\_\_

SPC (Y/N): \_\_\_\_\_

Date: \_\_\_\_\_

Stop

**\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

190

QC3- Inspect Part Finish

0.00

**\*190\***

QC

Memo

0.00

Quality Control

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Item Name: Replacement Skidtube

Stop **\*NS2\***

Start Date: 10/04/2012 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 24/04/2012 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

200

Assemble as per dwg

0.00

**\*200\***

HandFinish

**Memo**

0.00

Hand Finishing

1-Install inserts &amp; wearplates &amp; gaskets using a drop of Sikaflex on insert holes before installing wearplates

A/R Sikaflex-291 \_\_\_\_\_

Sikaflex expire date: \_\_\_\_\_

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2590 and seal Fwd Step &amp; Aft Cap with Sikaflex. Clean excess adhesive

A/R Sikaflex-291 \_\_\_\_\_

Sikaflex expire date: \_\_\_\_\_

5-Wing Walk as per Dwg D2590 and QSI 005

4.4

Batch: \_\_\_\_\_

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Item ID: D204-635-041

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**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Replacement Skidtube

Start Date: 10/04/2012 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 24/04/2012 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start **\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop **\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

210

QC5- Inspect part completeness to step on W/O

0.00

**\*210\***

QC

Memo

0.00

Quality Control

215

Identify as per dwg &amp; Stock Location: \_\_\_\_\_

0.00

**\*215\***

Packaging

Memo

0.00

Packaging

220

QC21- Final Inspection - Work Order Release

0.00

**\*220\***

QC

Memo

0.00

Quality Control

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Work Order ID: 82831

**\*82831\***

Parent Item: D204-635-041

**\*D204-635-041\***

Parent Item Name: Replacement Skidtube

Start Date: 10/04/2012

Required Date: 24/04/2012

Start Qty: 1.00

Required Qty: 1.00

## Comments:

IPP Rev:F 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30KJ  
 IPP Rev:G 07-07-09 Added SS Wearplates & Gaskets JLM IPP RevH:  
 add identify and stock seq DD 10.01.28 verf:EC  
 IPP Rev:I 10.12.01 as per DEO DD verf:EC IPP REV:J  
 12.01.23 AS PER ECN11-684 DD  
 VERF:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D4202-1		Manufactured	No			150	Each	290.0000	17	17			

**\*D4202-1\***

**\*\***

Spacer

Location	Loc Qty	Loc Code
LG	5	
77727	5	
LG002	285	
78806	6	
79810	279	

ALS7-1032-130

Purchased

No

180

Each

234.0000

44

44

**\*ALS7-1032-130\***

**\*\***

Insert

Location	Loc Qty	Loc Code
ST280	149	
117717	27	
118966	22	
119775	100	
ST282	85	
119530	73	
120181	12	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Parent Item: D204-635-041

**\*D204-635-041\***

Parent Item Name: Replacement Skidtube

Start Date: 10/04/2012

Required Date: 24/04/2012

Start Qty: 1.00

Required Qty: 1.00

AN3-5A	Purchased	No	180	Each	1,536.000	2	2
--------	-----------	----	-----	------	-----------	---	---

**\*AN3-5A\***

Bolt

**\*\***

Location

Loc Qty

Loc Code

ST350	1536	
115371	46	
117423	124	
118626	166	
119355	200	
120187	500	
121185	500	

AN3C4A	Purchased	No	180	Each	2,952.000	44	44
--------	-----------	----	-----	------	-----------	----	----

**\*AN3C4A\***

BOLT

**\*\***

Location

Loc Qty

Loc Code

ST350	2952	
120187	1886	
120521	28	
120769	38	
121205	1000	

AN960C10L	NAS1149C0332 R	Purchased	No	180	Each	0.0000	44	44
-----------	----------------	-----------	----	-----	------	--------	----	----

**\*AN960C10I \***

washer

**\*\***

AN960JD10L	NAS1149D0332J	Purchased	No	180	Each	0.0000	2	2
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**\*AN960.ID10I \***

Washer

**\*\***

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Start Date: 10/04/2012

Required Date: 24/04/2012

Start Qty: 1.00

Required Qty: 1.00

D2594-1	Manufactured	No	180	Each	567.0000	10	10
---------	--------------	----	-----	------	----------	----	----

**\*D2594-1\***

Plug, 205 Skidtube

**\*\***

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP001	322	
73401	30	
74442	34	
79495	258	
FP-A	245	
73401	0	
78590	245	

D2594-3	Manufactured	No	180	Each	2,674.000	10	10
---------	--------------	----	-----	------	-----------	----	----

**\*D2594-3\***

O-Ring, 205 Skidtube

**\*\***

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP001	2674	
65518	41	
79496	984	
79573	50	
79755	1599	

D2855	Manufactured	No	180	Each	41.0000	1	1
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**\*D2855\***

Cap

**\*\***

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP002	41	
65519	2	
73347	29	
75074	10	

W/O:		WORK ORDER CHANGES					
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Start Date: 10/04/2012

Required Date: 24/04/2012

Start Qty: 1.00

Required Qty: 1.00

D3564-11

Manufactured No

180

Each

20.0000

1

1

**\*D3564-11\***

**\*\***

Wearshoe

Location

Loc Qty

Loc Code

FG

4

77056

4

FP001

16

78871

4

80341

12

D3564-13

Manufactured No

180

Each

36.0000

1

1

**\*D3564-13\***

**\*\***

Wearshoe

Location

Loc Qty

Loc Code

FP001

2

71594

1

77610

1

FP002

34

80342

12

82249

22

D3564-7

Manufactured No

180

Each

13.0000

1

1

**\*D3564-7\***

**\*\***

Wearshoe

Location

Loc Qty

Loc Code

FP001

13

33803

2

43229

11

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Start Qty: 1.00

Required Qty: 1.00

D3564-9

Manufactured No

180

Each

9.0000

1

1

**\*D3564-9\***

**\*\***

Wearshoe

Location

Loc Qty

Loc Code

FG

4

76950

4

FP001

5

67590

4

69943

1

D3566-1

Manufactured No

180

Each

39.0000

2

2

**\*D3566-1\***

**\*\***

Gasket

Location

Loc Qty

Loc Code

FP

-10

81619

22

FP002

49

68924

2

80919

15

D3566-13

Manufactured No

180

Each

18.0000

1

1

**\*D3566-13\***

**\*\***

Gasket

Location

Loc Qty

Loc Code

FP002

18

76947

18

D3566-7

Manufactured No

180

Each

20.0000

1

1

**\*D3566-7\***

**\*\***

Gasket

Location

Loc Qty

Loc Code

FP002

20

55490

20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

April-10-12 2:22:56 PM

Page 6

Work Order ID: 82831

Parent Item: D204-635-041

Parent Item Name: Replacement Skidtube

\*82831\*

\*D204-635-041\*

Start Date: 10/04/2012

Required Date: 24/04/2012

Start Qty: 1.00

Required Qty: 1.00

D2500-1-190

Manufactured No

110

Each

100.0000

1

1

\*D2500-1-190\*

Ext'n -I' Beam Tube 4"

\*\*

SAD 12-07-26

Location

Loc Qty

Loc Code

HALL

100

74777

20

80061

80

385483

①

D2597

Manufactured No

110

Each

0.0000

1

1

\*D2597\*

204 Web

D2576-3

Manufactured No

150

Each

35.0000

1

1

\*D2576-3\*

Step (maching detail)

\*\*

SAD 12-07-26

\*\*

Location

Loc Qty

Loc Code

LG

35

74136

35

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

LIST OF MATERIALS				
ITEM	QTY -041	QTY -043	PART NUMBER	DESCRIPTION
1	X		D2590-041	SKIDTUBE ASSEMBLY
2		X	D2590-043	SKIDTUBE ASSEMBLY
3	1	1	D2500-1-190	EXTRUSION
4		16	D2570	BUSHING
5	1	1	D2576-3	STEP
6	17	22	D2579	SPACER
7	10	4	D2594-1	PLUG
8	10	4	D2594-3	O-RING
9	1	1	D2597	204 WEB
10	1	1	D2855	AFT CAP
11	1		D3564-7	WEARSHOE
12	1		D3564-9	WEARSHOE
13	1		D3564-11	WEARSHOE
14	1		D3564-13	WEARSHOE
15	2		D3566-1	GASKET
16	1		D3566-7	GASKET
17	1		D3566-13	GASKET
18		1	D4408-041	WEARPLATE ASSEMBLY
19		1	D4408-043	WEARPLATE ASSEMBLY
20	44		ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
21	44		AN3C4A	BOLT
22	2	2	AN3-5A	BOLT
23		8	AN4-45A	BOLT
24	44		NAS1149C0332R	WASHER (AN960C10L)
25	2	2	NAS1149D0332J	WASHER (AN960JD10L)
26		8	MS21042-4	NUT (OR MS21042L4)

# GENERAL NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION PER DART QSI 005 4.1 PRIOR TO INSERTING D2597 WEB  
POWDER COAT ASSEMBLY GLOSS WHITE 4.3.5.1 PER DART QSI 005 4.3  
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: D2590-041 = 31.5 lbs  
D2590-043 = 33.3 lbs
- 8) WELDING PER DART QSI 004.
- 9) INSERT D2597 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 10) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 11) USE DART DRILL TEMPLATE DT8218 ONLY FOR D2590-041 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION B-B (44 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND NAS1149C0332R WASHERS WITH SIKAFLEX-241/-291.
- 12) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (10 PLACES FOR D2590-041 AND 8 PLACES FOR D2590-043).
- 13) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION.

SHOP COPY  
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WITHOUT NOTICE

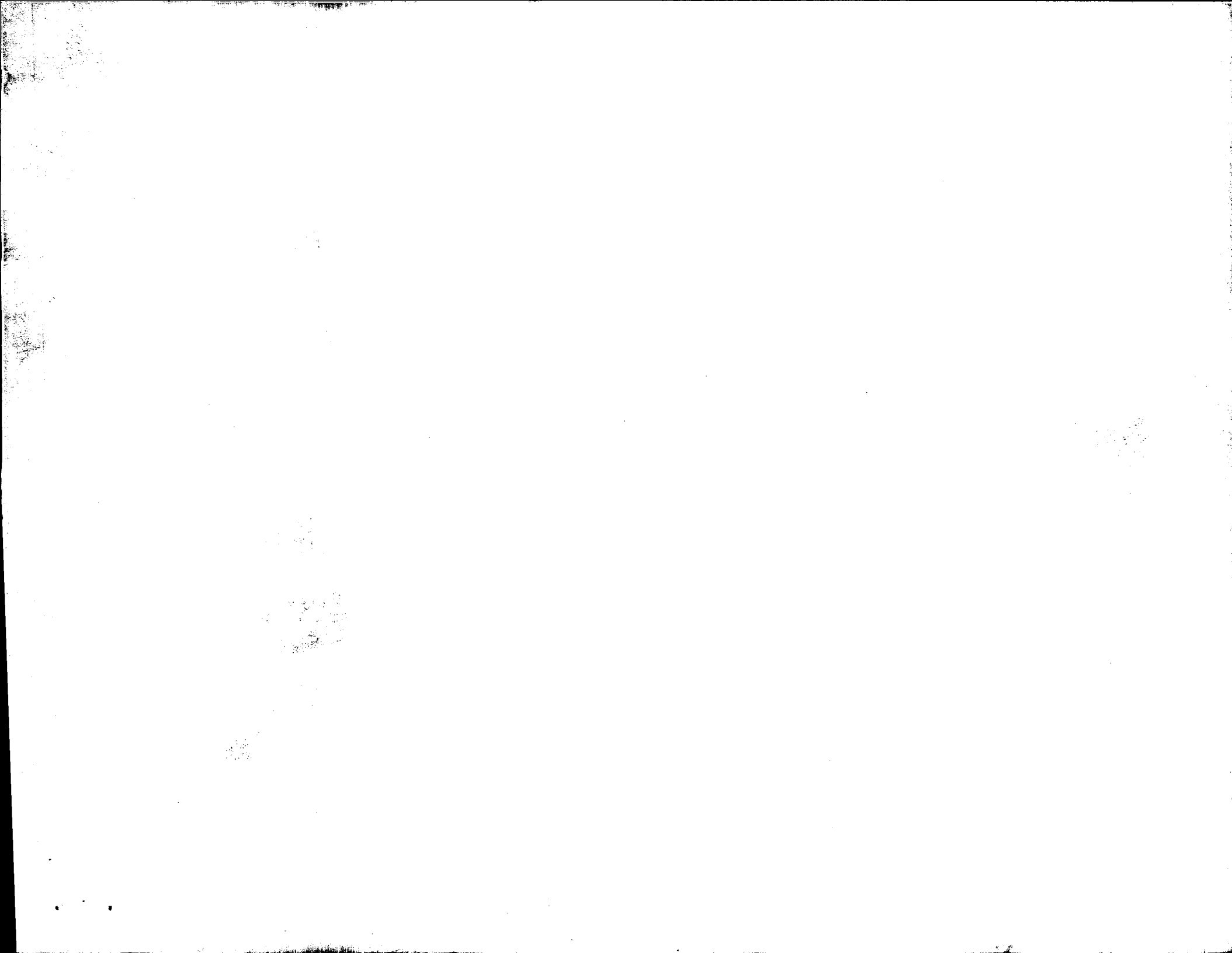
WORK ORDER  
NO. 82831 MLJ

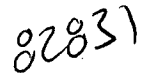
12/04/10

DEO ATTACHED

RELEASED  
2011-08-29  
MJP

E	ADD D2590-043; DT8218 WAS TD2577-204 (ZN C4-1); REFORMATTED DRAWING TO CURRENT STANDARDS	RF	11.06.21
D	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124	PH	07.04.05
C	REDRAWN, INCLUDED DEO 9094/ 9097	CP	98.08.28
B	AS MANUFACTURED	DS	96.12.02
A	NEW ISSUE	DS	96.09.16
REV.	DESCRIPTION	BY	DATE
DESIGN	<u>RF</u>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	<u>RF</u>	DRAWING NO.	REV. E
MFG. APPR.	<u>RF</u>	D2590	SHEET 1 OF 6
APPROVED	<u>RF</u>	TITLE	SCALE
DE APPR.	<u>RF</u>	204 SKIDTUBE ASSEMBLY	NTS
DATE	11.06.21	COPYRIGHT © 1996 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	



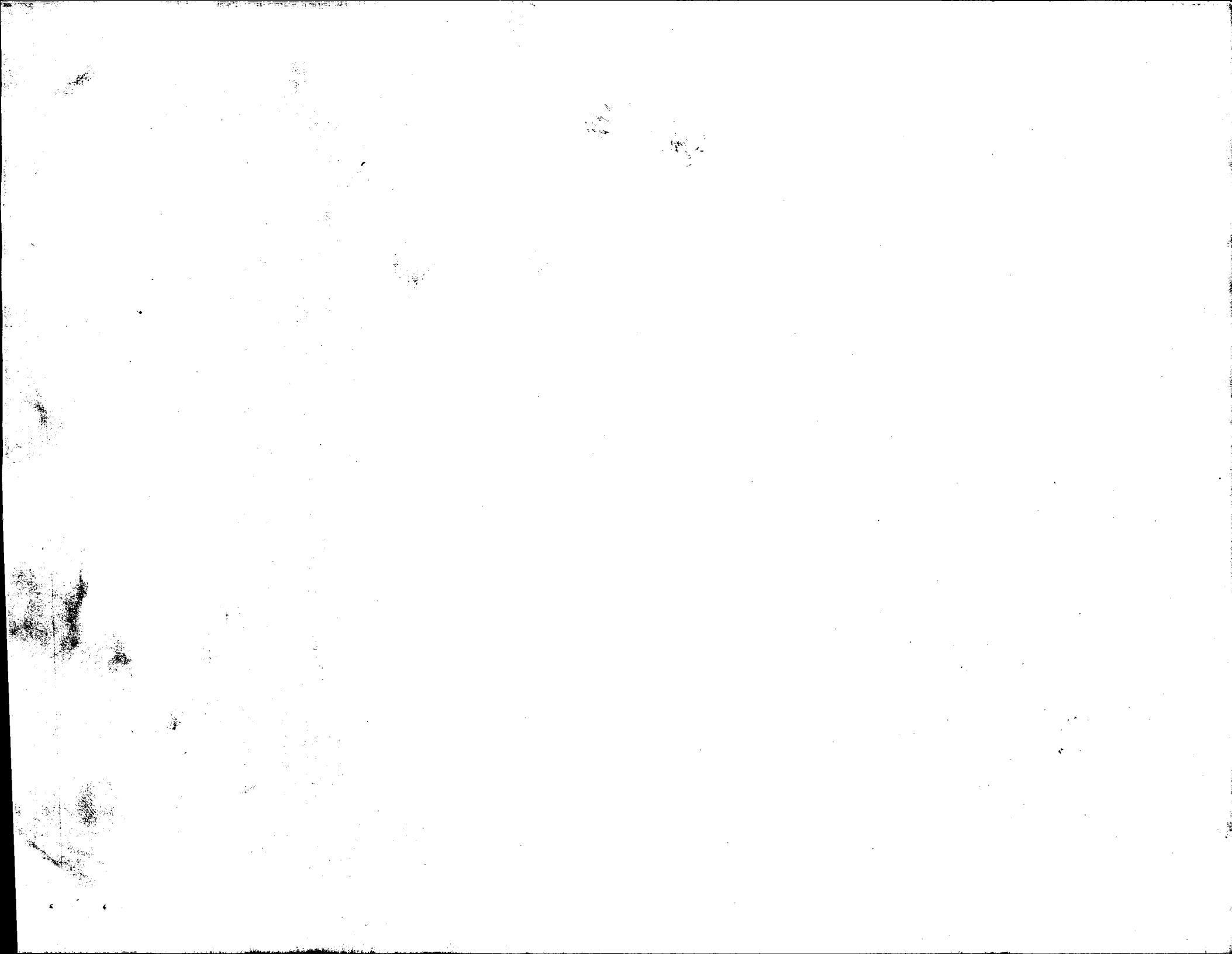


DETAIL A C6-2  
SCALE 5X



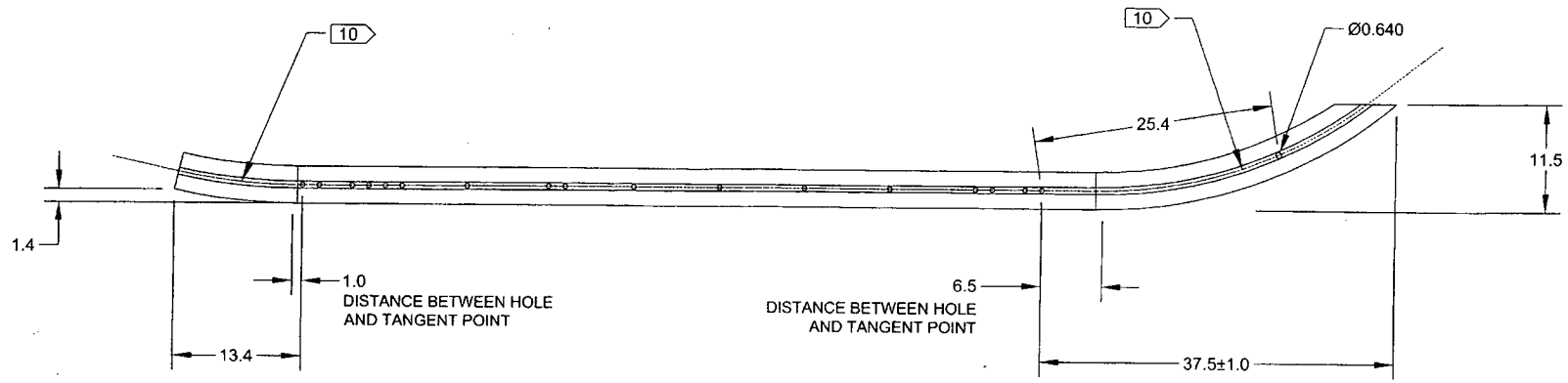
RELEASED  
2011-08-29

- |            |           |  |              |
|------------|-----------|--|--------------|
| DESIGN     | <i>4</i>  | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA<br><br>DRAWING NO. <b>D2590</b><br><br>TITLE<br><b>204 SKIDTUBE ASSEMBLY</b><br><br>COPYRIGHT © 1996 BY DART AEROSPACE LTD<br><small>THIS DOCUMENT IS PRIVATE AND NOT TO BE RELEASED TO THE PUBLIC OR DISTRIBUTED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small> | <i>10</i>    |
| DRAWN      | RF        |  | REV. E       |
| CHECKED    | <i>10</i> |  | SHEET 2 OF 6 |
| MFG. APPR. | <i>10</i> |  | SCALE        |
| APPROVED   | <i>10</i> |  | NTS          |
| DE APPR.   | <i>10</i> |  |              |
| DATE       | 11.06.21  |  |              |





82831



D2590-1 BENT TUBE  
(MAKE FROM D2590-101 TUBE)

DEO ATTACHED  
RELEASED  
2011-08-29

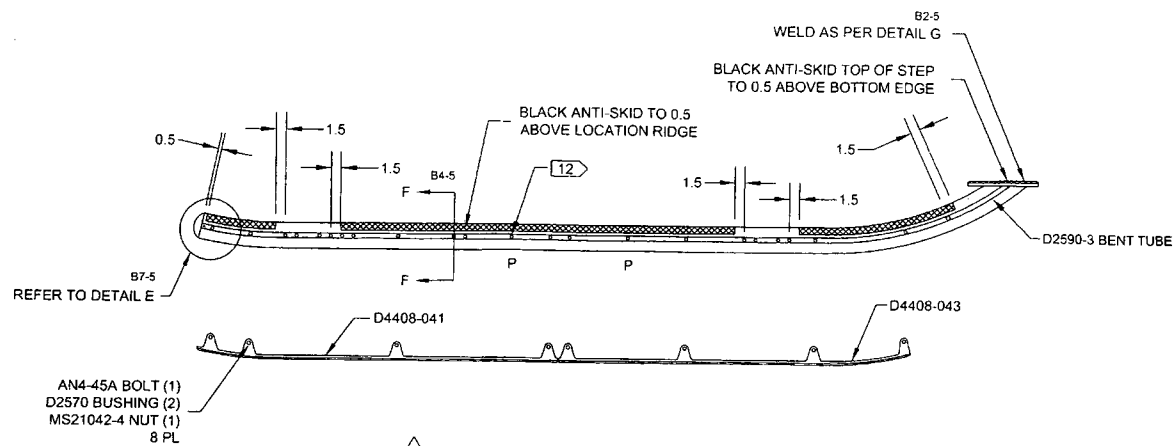
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DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	10	DRAWING NO.	REV. E
MFG. APPR.	10	D2590	SHEET 3 OF 6
APPROVED	10	TITLE	SCALE
DE APPR.	#	204 SKIDTUBE ASSEMBLY	NTS
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13.25 71.03 ± 7 35.9

126.2

1.7

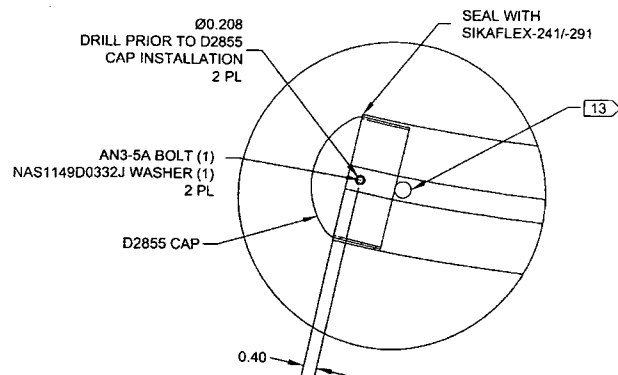




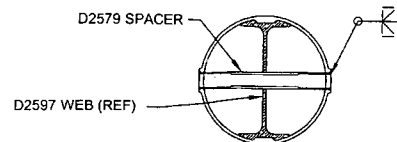
 D2590-043 ASSEMBLY DETAIL

DEO ATTACHED  
RELEASE  
2011-08-28  
MP

DETAIL E C6-5  
SCALE 5X

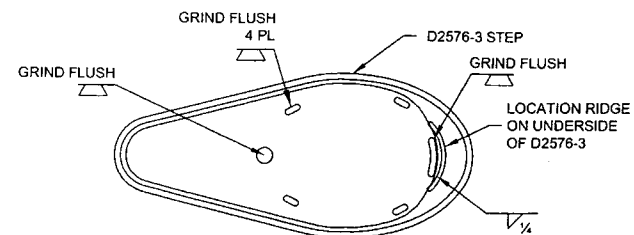


SECTION F-F D5-5  
SCALE 5X



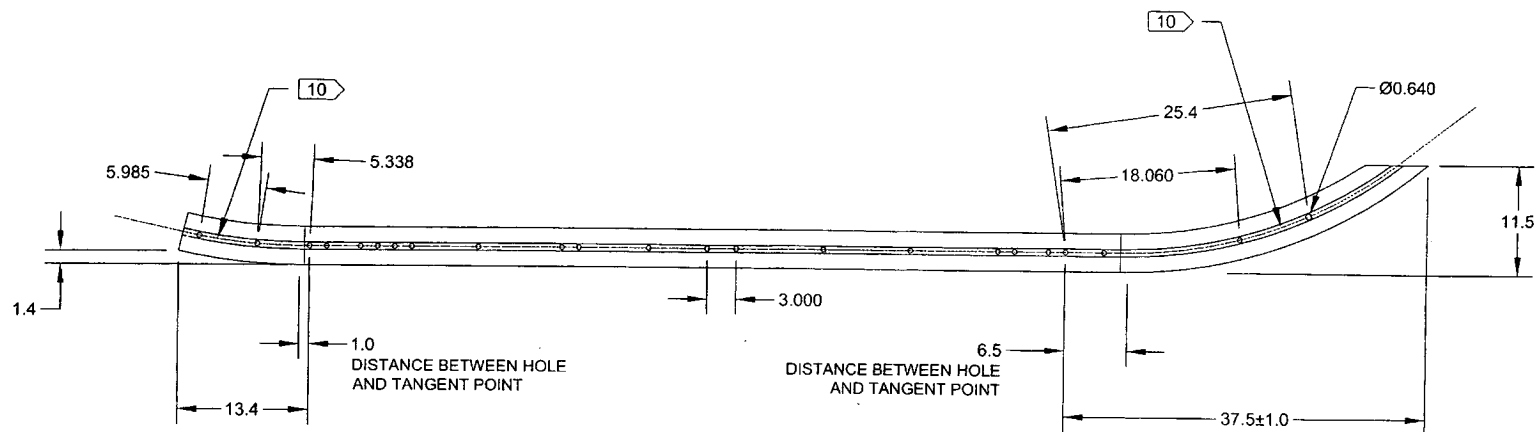
- AFTER DRILLING AND BENDING ASSEMBLY  
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:**
- 1. CHAMFER HOLE 0.050 X 45°**
  - 2. INSERT D2579 SPACER (22 PLACES)**
  - 3. WELD INTO PLACE AND GRIND FLUSH**
  - 4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP**

DETAIL G D3-5  
SCALE 5X



DESIGN	<del>4</del>	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA  DRAWING NO. D2590  TITLE 204 SKIDTUBE ASSEMBLY  SCALE NT  COPYRIGHT © 1996 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND IS SUPPLIED TO THE CUSTOMER CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	REV. E
DRAWN	RF		SHEET 4 OF 6
CHECKED	<del>10</del>		
MFG. APPR.	<del>10</del>		
APPROVED	<del>10</del>		
DE APPR.	<del>10</del>		
DATE	11.06.21		





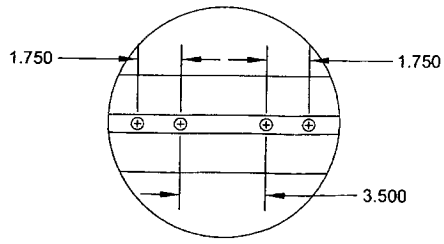
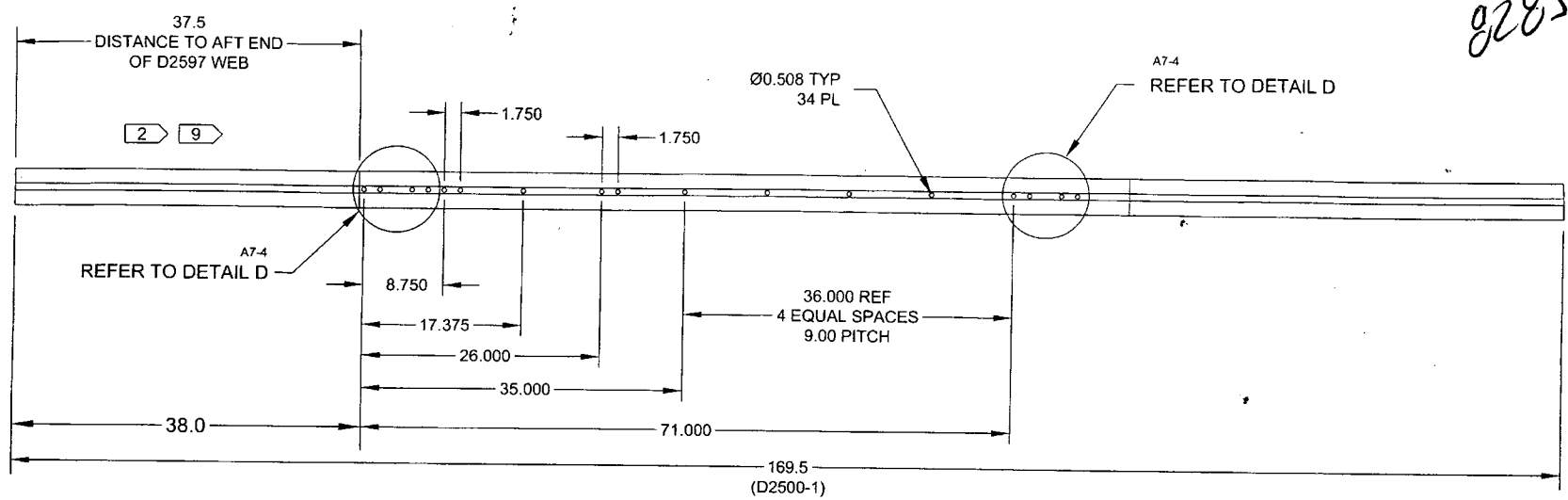
**E** D2590-3 BENT TUBE  
(MAKE FROM D2590-101 TUBE)

DEO ATTACHED  
RELEASED  
2011-08-29

DESIGN	RF	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. E
MFG. APPR.	IS	D2590	SHEET 5 OF 6
APPROVED	AP	TITLE	SCALE
DE APPR.	AP	204 SKIDTUBE ASSEMBLY	NTS
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82831



**DETAIL D**  
SCALE 5X

D3-4  
C7-4

D2590-101 TUBE

**DEO ATTACHED**  
**RELEASED**  
2011-08-29  
ND

DESIGN	#	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AP	DRAWING NO.	REV. E
MFG. APPR.	ND	D2590	SHEET 6 OF 6
APPROVED	AP	TITLE	SCALE
DE APPR.	#	204 SKIDTUBE ASSEMBLY	NTS
DATE	11.06.21	<small>COPYRIGHT © 1996 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

DRAWING NO. D2590	TITLE 204 SKIDTUBE ASSEMBLY	REV. E	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D2590-E-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN 90	CHECKED ASS	MFG. APPR. [Signature]	APPROVED [Signature]		DE APPR. [Signature]		
DATE 11.12.13	DATE 11.12.13	DATE 11.12.13	DATE 11/12/13		DATE 11/12/13		

**PURPOSE:**

CHANGE ALL WELDED CROSSBOLT SPACERS TO SWAGED SPACERS

**CHANGE:**

PARTS LIST IS AMENDED AS FOLLOWS:

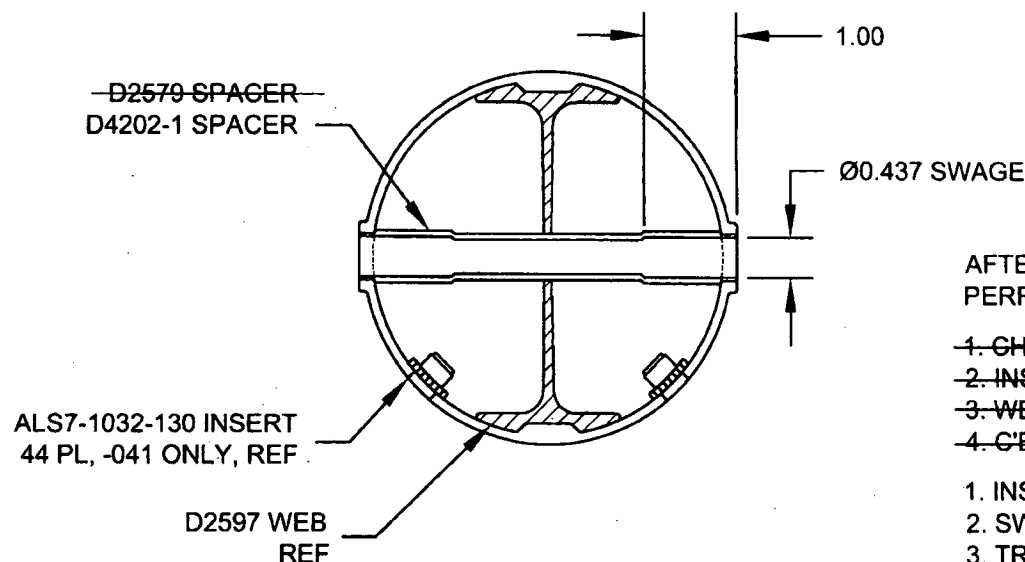
WAS

QTY	QTY	PART NUMBER	DESCRIPTION
-041	-043		
17	22	D2579	CROSS BOLT SPACER

IS

17	22	D4202-1	SPACER
----	----	---------	--------

SECTION B-B & F-F IS AMENDED AS FOLLOWS:



**RELEASED**  
2011-12-15

AFTER DRILLING AND BENDING ASSEMBLY  
PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:

1. CHAMFER HOLE 0.050 X 45°
  2. INSERT D2579 SPACER (17 PLACES)
  3. WELD INTO PLACE AND GRIND FLUSH
  4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP
1. INSERT D4202-1 SPACER, 17 PL
  2. SWAGE TO Ø0.437 X 1.00 DEEP PER QSI 002
  3. TRIM / GRIND FLUSH PER QSI 002

**SECTION B-B & F-F**  
NOT TO SCALE



